

Notice of Allowability

Application No.

10/796,454

Applicant(s)

YAGAWA ET AL.

Examiner

Hashem Farrokh

Art Unit

2187

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/3/06.
2. ☒ The allowed claim(s) is/are 1,3-14,16-18 and 23-32.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

PART I **THE EXAMINER'S EVALUATION OF THE APPLICATION**

SECTION A **RELEVANT ART CITED BY THE EXAMINER**

1. *U. S. Patent Publication No. 6,578,120 B1 to Crockett et al. describes Synchronization and resynchronization of loosely-coupled copy operations between a primary and a remote secondary DASD volume under concurrent updating.*
2. *U. S. Patent No. 5,799,322 to Mosher Jr. describes Distributed computer database system - includes remote computer systems which execute updater processes for reading image records in image trials.*
3. *U. S. Patent No. 6,587,935 B2 to Ofek describes Method and apparatus for mirroring data in a remote data storage system.*
4. *U. S. Patent No. 6,434,681 B1 to Armangau describes Snapshot copy facility for a data storage system permitting continued host read/write access.*

SECTION B **DISTINGUISHING FEATURES RECITED IN THE CLAIMS**

The following is an **Examiner's Statement of Reasons for Allowance** See **MPEP 1302.14**

1. *The primary reasons for allowance of independent claims 1, 3-5, and 12-14 in the instant application is the combination with the inclusion of following limitation: **copying the data from the third volume in the ternary storage system to a fourth volume in the ternary storage system, the fourth volume being provided with a third time consistent image corresponding to the second time consistent image, the third***

time consistent image being substantially the same as the first time consistent image.

2. *The primary reasons for allowance of independent claims 6-11 in the instant application is the combination with the inclusion of following limitation: **transferring the first data from the second volume in the primary storage system to a third volume in a ternary storage system at a second remote site, the third volume being provided with a second time consistent image of the second volume, shadow copying the first data from the first volume to the second volume if the first timestamp indicates a time that is prior to the reference point of time.***

3. *The primary reasons for allowance of independent claims 16 and 27-32 in the instant application is the combination with the inclusion of following limitation: **wherein the transmitting step involves a synchronous remote copying method, and the transferring step involves an asynchronous remote copying method.***

4. *The primary reasons for allowance of independent claim 17 in the instant application is the combination with the inclusion of following limitation: **receiving the data at the first storage system from a third storage system, wherein the receiving step involves a synchronous remote copying method and the transferring step involves an asynchronous remote copying method.***

5. *The primary reasons for allowance of independent claim 18 in the instant application is the combination with the inclusion of following limitation: **wherein the transferring step includes transferring the data from the secondary volume to a plurality of ternary volumes to provide each of the ternary volumes with the***

second time consistent image with respect to the second given time, the ternary volumes being provided in a plurality of secondary storage systems that are located at least 10 miles from the first storage system.

6. *The primary reasons for allowance of independent claims 23-24 in the instant application is the combination with the inclusion of following limitation: **suspending the copy operation if the second timestamp is after the reference point; and placing the second volume in a freeze mode to indicate that the second volume includes a point in time (PiT) copy of the first volume.***

7. *The primary reasons for allowance of independent claim 25 in the instant application is the combination with the inclusion of following limitation: **transferring the first data from the third volume in the secondary storage system to a fourth volume in a ternary storage system at a second remote site, wherein the copying step is suspended if the second timestamp of the second data does not satisfy the reference point of time.***

8. *The primary reasons for allowance of independent claim 26 in the instant application is the combination with the inclusion of following limitation: **checking a second timestamp of a second data to be copied from the first volume to the second and third volumes; and placing the second and third volumes in a Freeze mode to indicate that the second volume includes a point in time (PiT) copy of the first volume if the second timestamp of the second data to be copied from the first volume to the second and third volumes is after the reference point.***

The prior art of record including the disclosures of Crockett et al. (6,578,120 B1), Mosher Jr. (5,799,322), Ofek (6,587,935 B2), and Armangau (6,434,681 B1) neither anticipates nor renders obvious the above-recited combination.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays should be clearly labeled "Comments on Statement of Reasons for Allowance"

PART II THE ATTENTION OF FUTURE CORRESPONDENT

*Any inquiry concerning this communication should be directed to Hashem Farrokh whose telephone number is (571) 272-4193. The examiner can normally be reached Monday-Friday from **8:00 AM to 5:00 PM**.*

:IMPORTANT NOTE:

If attempt to reach the above noted Examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Donald A Sparks, can be reached on (571) 272-4201. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published application may be obtained from either private PAIR or Public PAIR. Status information for unpublished application is available through Private PAIR only. For more information about PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on

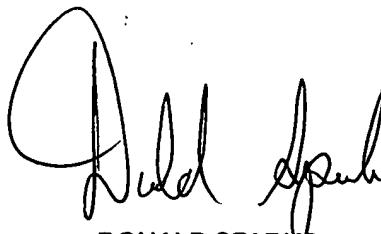
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*access to the Private PAIR system, contact the Electronic Business Center (EBS) at
866-217-9197 (toll-free).*

HF
HF

2006-05-24

A handwritten signature in black ink, appearing to read 'Donald Sparks', written in a cursive style.

DONALD SPARKS
SUPERVISORY PATENT EXAMINER